PATENT

AMENDMENTS TO THE SPECIFICATION

Replace the paragraph beginning at page 1, line 9 with the following:

This application is related to copending U.S. Patent Applications: 1) Serial No. [[__/_____]] 10/606,299, filed ~~concurrently herewith, Attorney Docket No. A03P1046US01~~ June 24, 2003, titled "System and Method for Detecting Cardiac Ischemia Based on T-Waves Using an Implantable Medical Device"; and 2) Serial No. [[__/_____]] 10/603,429, filed ~~concurrently herewith, Attorney Docket No. A03P1031~~ June 24, 2003, titled "System and Method for Detecting Cardiac Ischemia Using an Implantable Medical Device," which are incorporated herein by reference.

Replace the paragraph beginning at page 4, line 8 with the following:

One such technique is set forth in U.S. Patent Application Serial Number ~~xx/xxx,xxx~~ 10/603,429, of Wang et al., entitled "System And Method For Detecting Cardiac Ischemia Using An Implantable Medical Device", filed contemporaneously herewith, which assigned to the assignee of rights to the present application and is incorporated by reference herein. Rather than examine the ST segment, the technique of Wang et al. instead examines post-T-wave segments, i.e. that portion of the cardiac signal immediately following the T-wave. Although the technique of Wang et al. is very effective in detecting cardiac ischemia while avoiding problems associated with ST segments, it would also be desirable to provide additional or alternative techniques that do not exploit the ST segment.

Replace the paragraph beginning at page 19, line 20 with the following:

FIG. 6 provides a side-by-side comparison of a right ventricular ring IEGM for a single ~~hear~~ heart beat for normal sinus rhythm and for cardiac ischemia, again obtained from a canine test subject. More specifically, solid line ~~312~~ 314 illustrates the heart beat during normal sinus rhythm (i.e. baseline) whereas dashed line ~~314~~ 312 illustrates the heart beat obtained five minutes after artificial occlusion of the left anterior descending coronary artery (LAD). In the figures, reference numeral 316 identifies a T-wave window, centered at each T-wave peak, in which the total energy and maximum slope is

actually calculated. The T-wave ~~widow~~ window (TW) is 60 milliseconds (ms) in both cases. The integral of T-wave energy within the window was determined to be 364 □V-seconds during the ischemia but only 124 □V-seconds during normal sinus rhythm. Max dV/dt during ischemia was determined to be -0.22 V/second but only -0.08 V/second during normal sinus rhythm. Note that maximum dV/dt here refers to the maximum positive or maximum negative slope, whichever is larger in magnitude.

Replace the paragraph beginning at page 25, line 19 with the following:

Then, at step 608, differences are calculated between the latest value for the T-wave energy and its corresponding running average and between the latest value of the maximum slope and its corresponding running average. At step 610, the calculated differences are compared against predetermined threshold values ($T_{PacedBeatEnergy}$, $T_{SinusBeatEnergy}$, $T_{MaxSlope}$) to identify the onset of an episode of cardiac ischemia and to subsequently identify the termination of the episode. For example, the following logic may be used to detect the onset of an episode of ischemia:

If "paced" and

$E_{T\text{-}wave} - E_{AveragePaced} > T_{PacedBeatEnergy}$ or

If "sinus" and

$E_{T\text{-}wave} - E_{AverageSinus} > T_{SinusBeatEnergy}$ or

If $MaxSlope_{T\text{-}Wave} - E_{AverageMaxSlope} > T_{MaxSlope}$

Then ischemia is occurring.

The following logic may be used to detect the termination of an episode of ischemia:

If "paced" and

$E_{T\text{-}wave} - E_{AveragePaced} \leq T_{PacedBeatEnergy}$ or

If "sinus" and

$E_{T\text{-}wave} - E_{AverageSinus} \leq T_{SinusBeatEnergy}$ or

If $MaxSlope_{T\text{-}Wave} - E_{AverageMaxSlope} \leq T_{MaxSlope}$

Then no ischemia.

Replace the subject headings at: page 1, lines 8, 18 and 24; page 5, line 18; page 7, line 25; page 9, lines 9 and 18; page 17, line 7; page 20, line 5 and page 23, line 1, page 28, lines 1 and 2; page 34, line 1 with the following, respectively:

[[Cross Reference to Related Applications]] CROSS REFERENCE TO RELATED APPLICATIONS

[[Field of the Invention]] FIELD OF THE INVENTION

[[Background of the Invention]] BACKGROUND OF THE INVENTION

[[Summary of the Invention]] SUMMARY OF THE INVENTION

[[Brief Description Of The Drawings]] BRIEF DESCRIPTION OF THE DRAWINGS

[[Description Of The Preferred Embodiments]] DESCRIPTION OF THE PREFERRED EMBODIMENTS

[[Overview of Implantable Device]] Overview of Implantable Device

[[Overview of T-wave-based Cardiac Ischemia Detection]] Overview of T-wave-based Cardiac Ischemia Detection

[[T-wave Detection]] T-wave Detection

[[T-wave Energy and Maximum Slope Calculation]] T-wave Energy and Maximum Slope Calculation

[[CLAIMS]] CLAIMS

[[What is claimed is:]] What is claimed is:

[[Abstract of the Disclosure]] ABSTRACT OF THE DISCLOSURE